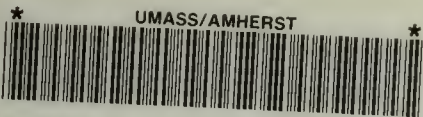


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GRADUATION REQUIREMENTS IN
MASSACHUSETTS HIGH SCHOOLS

GOVERNMENT DOCUMENTS
COLLECTION

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Bureau of Research and Assessment
Massachusetts Department of Education

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EXECUTIVE SUMMARY

Graduation Requirements in Massachusetts High Schools summarizes the courses required for graduation as reported by 250 Massachusetts high school districts in the fall of 1983. The report describes the requirements in effect for the Class of 1984 and changes implemented for students who entered high school in September, 1983. Some important findings are listed below.

Description

- . 97.2% of Massachusetts 9-12 high schools require more than 3 years of English. By 1987, 100% will require 4 or more years of English.
- . 71.2% of Massachusetts 9-12 high schools require at least 2 years of math. By 1987, 84.4% will require at least 2 years of math.
- . 86.3% of Massachusetts 9-12 high schools require at least 2 years of social studies. 92.4% will require at least 2 years of social studies by 1987.
- . 57.1% of Massachusetts 9-12 high schools require at least 2 years of science. By 1987, 71.3% will require at least 2 years of science.
- . No high school requires coursework in foreign language for the Class of 1984; 3 schools have introduced a foreign language requirement for the Class of 1987.
- . Of all the courses required for high school graduation in 9-12 high schools, an average of 9.4 years are specified in the four core academic areas.

Analysis

- . No significant differences in graduation requirements were found among communities classified according to wealth and per pupil expenditure.
- . Schools in KOC 4 (Small towns and other communities) have slightly higher average graduation requirements than schools in the other three KOC's.

Changes in Graduation Requirements

- . 25.6% of Massachusetts high schools have initiated changes in requirements for the Class of 1987.

Further Study

A study of high school curriculum is being conducted by the Department of Education focusing on student course-taking

behavior as an alternative approach to describing a high school education. This study will analyze transcripts of approximately 3,000 students and will examine the number and the levels of courses taken by students. The results will be reported in June, 1985, for the Class of 1984.

I. INTRODUCTION

Proposals to increase graduation requirements frequently appear on the agenda of those involved in educational reform. According to a recent report issued by the Secretary of Education, 48 states (including the District of Columbia) have recently adopted or are now considering changes in the courses required for high school graduation.¹

Massachusetts, unlike most other states, has traditionally allowed local school districts to establish their own graduation requirements. State law governing public schools contains only two provisions related to course requirements. First, Chapter 71, Section 2 of the General laws stipulates that "in all public elementary and high schools American History and Civics...shall be taught as required subjects." This provision has been interpreted to mean that school districts must require one year of American history for high school graduation. In addition, Chapter 71, Section 3 provides that "Physical Education shall be taught as a required subject in all grades for all students." State law mandates no other requirements beyond American History and Physical Education.²

In contrast, a large majority of states set minimum graduation requirements at the state level. Massachusetts is one of nine states that continues to allow local control of high school course requirements. Several of these nine states are considering changes that would shift control away from local districts.³

Whether or not statewide minimum requirements exist, local districts often establish additional requirements for their students on their own initiative. A 1983 survey conducted by the National Center for Educational Statistics showed that 53% of the nation's school districts increased requirements in the prior two years, and 38% planned to implement new standards by 1985.⁴

Graduation requirements, whether set at the state or local level, generally contain two elements. First, the requirements often specify the number of years of instruction in various subject areas. Second, the requirements typically establish a minimum number of total courses or credits necessary for high school graduation. No two states are identical in these requirements. The total number of courses mandated in states that set requirements ranges from 15 to 24.⁵ Thus, there is considerable diversity and certainly no consensus among the states as to what graduation requirements should be set at the state level.

II. DEPARTMENT STUDY OF GRADUATION REQUIREMENTS

A parallel diversity exists in the graduation requirements established by the more than 250 high school districts in Massachusetts. No comprehensive effort to collect data on local practices in Massachusetts has been made in recent years. For this reason, the Board of Education instructed the Department to collect some basic data in order to inform the current discussion of graduation requirements.

In the October 1, 1983, School System Summary Report, school districts in Massachusetts were asked to report the number of years they required in four subject areas: English, Math, Science and Social Studies. In addition, districts were asked to list any other subject areas in which they required course work, and the number of years of such courses needed for graduation. The districts were asked to list the minimum course requirements applicable to all students in the district. Additional requirements applicable to particular sub-groups of students (such as college-bound students) were not requested.

The data collected and reported thus do not include information on the second component noted above - the total number of credits/courses required for graduation. No consistent system exists in Massachusetts for assigning credit to coursework. Some districts use the traditional one credit for each course meeting 200 minutes per week. Others use a point system assigning one point for each period a week that a course meets. In addition, numerous other ways of structuring course credit exist in Massachusetts high schools. The data collection effort of the fall report did not attempt to untangle the variety of practices in credit assignment.

Districts were asked to state their requirements in terms of a number of years of instruction. As noted above, Massachusetts high schools use a variety of ways to organize courses and requirements. As a result, in some cases, district requirements reported here are presented in a manner quite different from the form generally used in that district. For example, requirements specifying courses in a "humanities cluster" have been converted to English and social studies requirements to the extent possible.

The primary objective of the survey was to collect data about requirements in the four subject areas listed above, plus foreign language. Districts were asked to specify other requirements, however, and the data collected indicate a substantial diversity of requirements in other subject areas. In addition, the practice of allowing some choice in fulfilling requirements occurs more frequently in non-academic areas than in the academic core subjects. For example, a typical district might require a one-year course chosen from either the practical or the fine arts. Thus, requirements in non-academic areas are not as easily expressed in years as are the academic areas.

III. DESCRIPTION OF GRADUATION REQUIREMENTS FOR THE CLASS OF 1984

A. Academic Areas

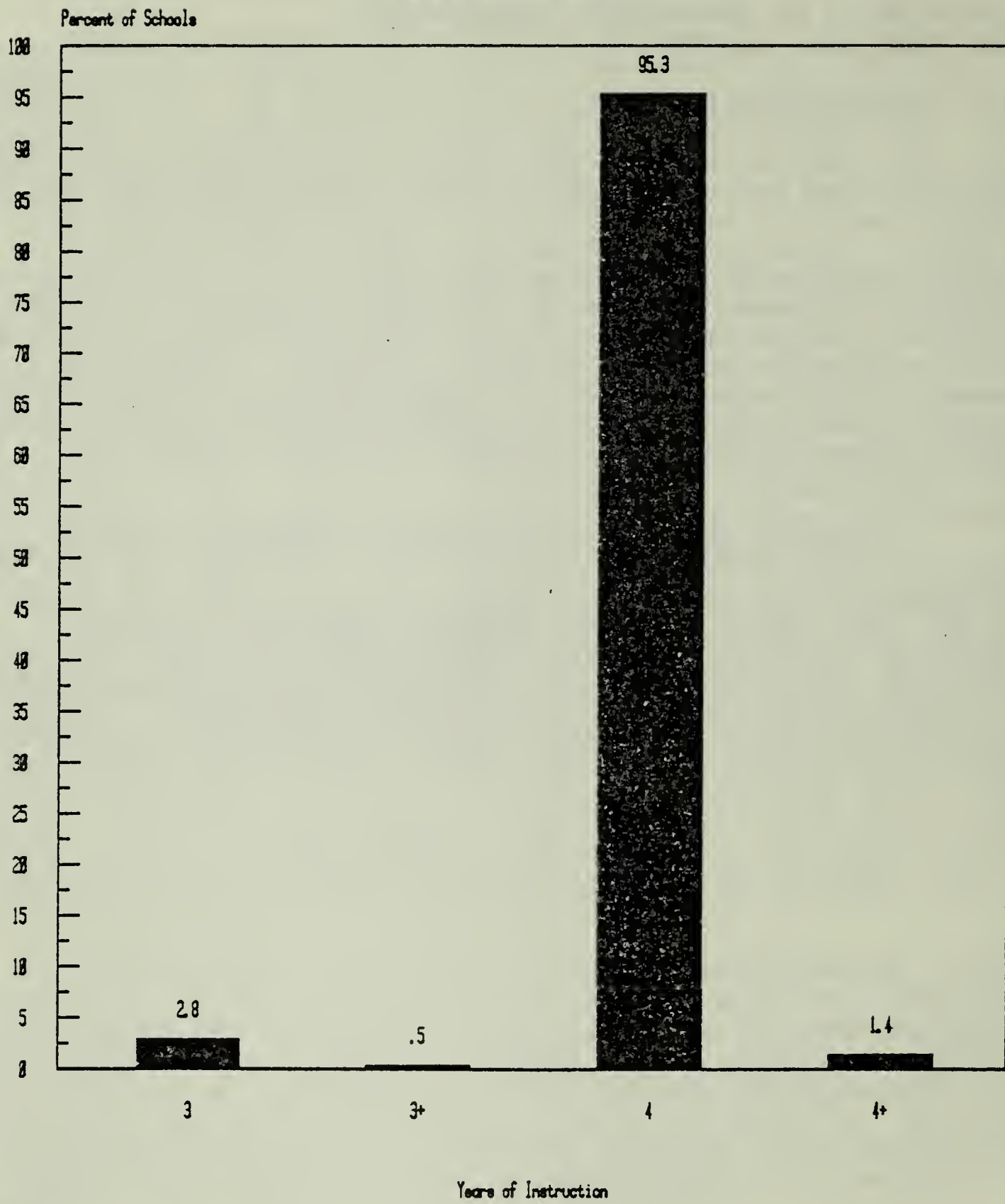
The data below describe graduation requirements in each subject area for the Class of 1984. Distribution of course requirements in each is given for two categories of schools: comprehensive 9-12 high schools and vocational high schools. Massachusetts high schools that include only grades 10-12 are reported in two ways. Some 10-12 schools establish requirements for grade 9-12 and these are included in the data for comprehensive 9-12 schools. Seven high schools with grades 10-12, however, listed 3-year graduation requirements. Since it is not reasonable to compare 3-year with 4-year requirements, the data for these seven high schools are given in Appendix I.

A total of 212 Massachusetts high school districts reported requirements for grades 9-12. Figures 1-4 show the distribution of those requirements in four academic subject areas. No school district reported requiring foreign language instruction for all graduating students in the Class of 1984. The average number of years of instruction required in each subject area is given in Table 1. Table 2 summarizes the requirements for 31 vocational high schools.

FIGURE 1

ENGLISH

Years of Instruction Required - 1984

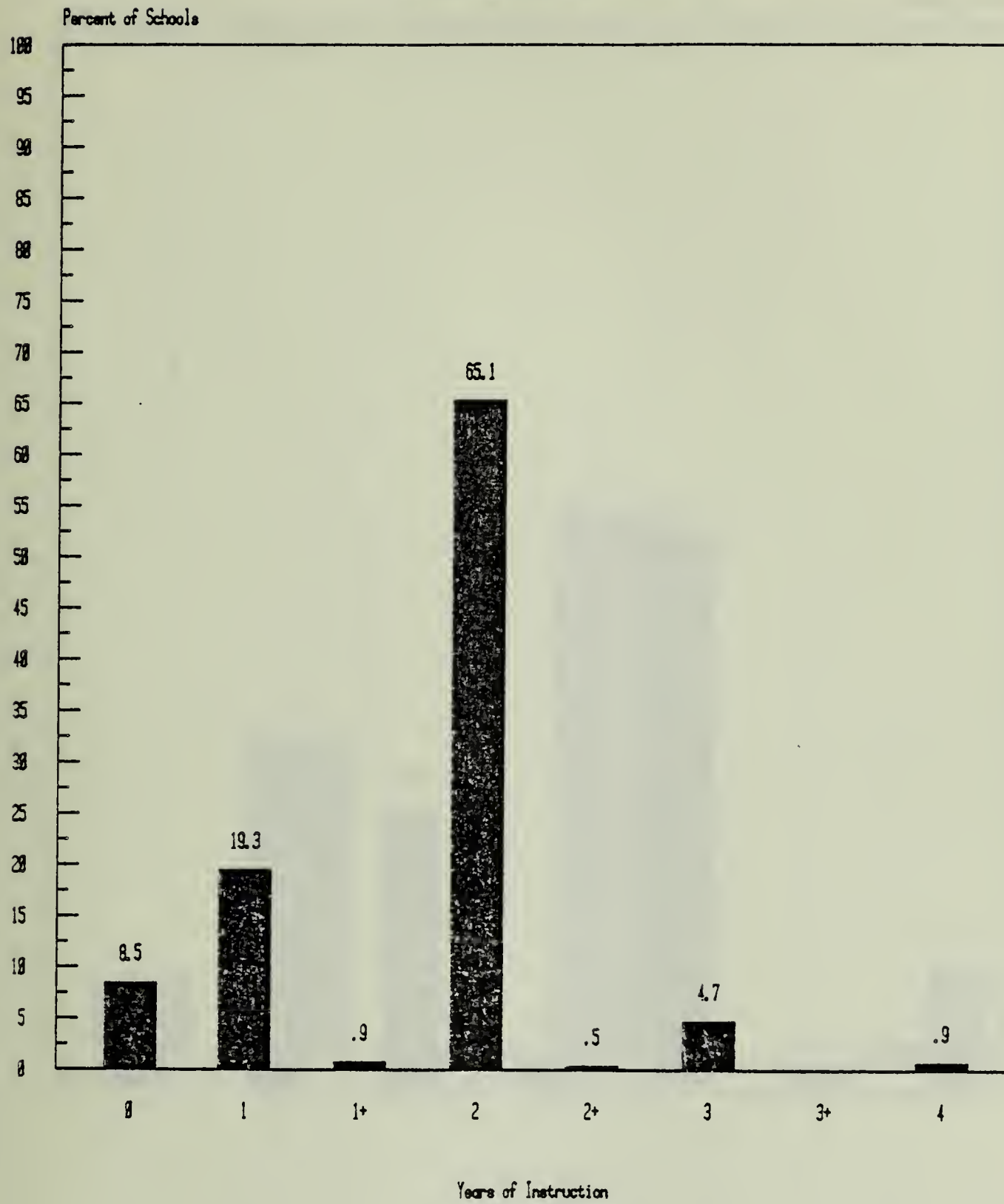


* 97.2% of Massachusetts 9-12 high schools require more than 3 years of English.

FIGURE 2

MATH

Years of Instruction Required - 1984



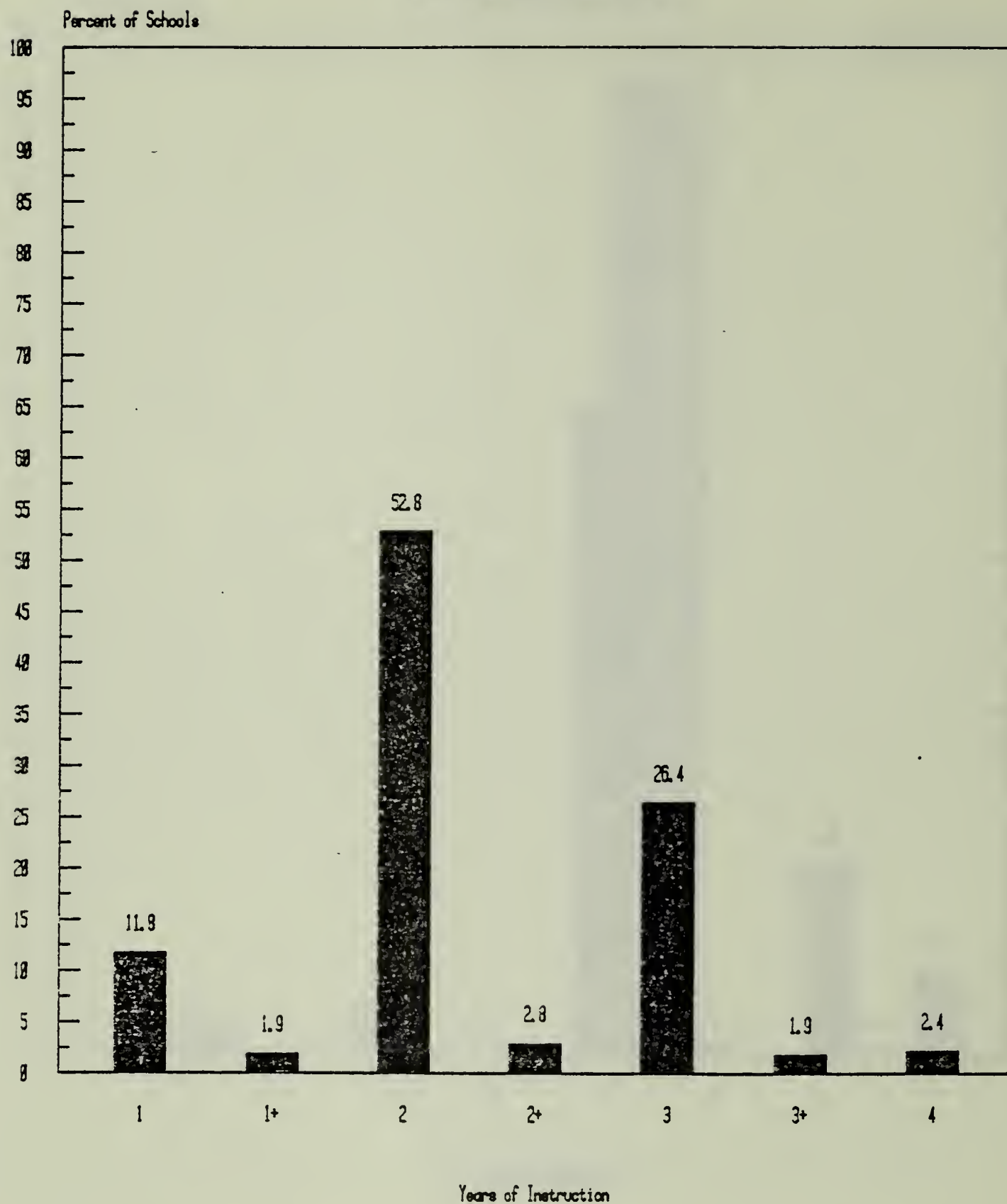
* 71.2% of Massachusetts 9-12 high schools require at least 2 years of math.

* 5.6% of Massachusetts 9-12 high schools require at least 3 years of math.

FIGURE 3

SOCIAL STUDIES

Years of Instruction Required - 1984



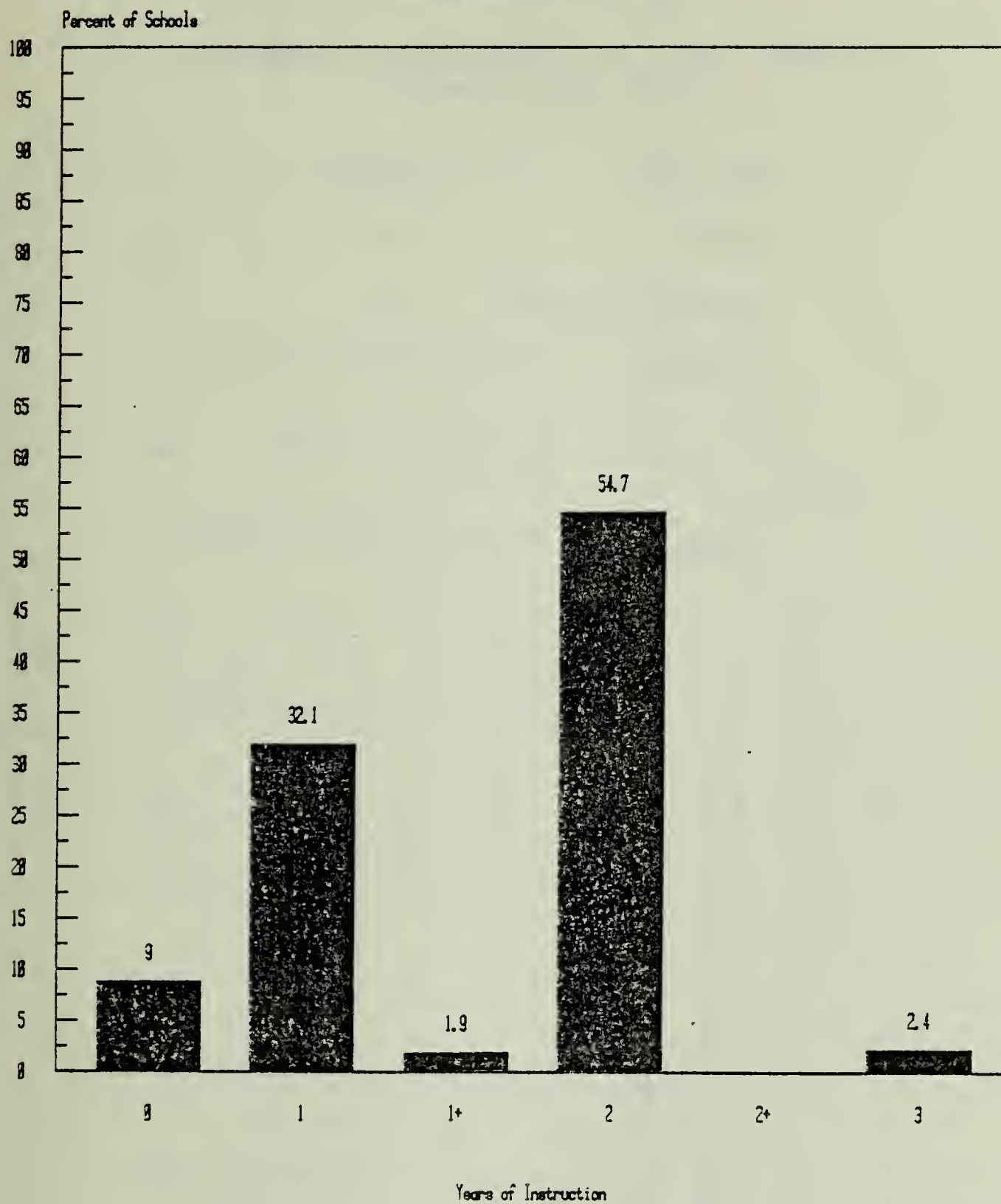
* 86.3% of Massachusetts 9-12 high schools require at least 2 years of social studies.

* 30.7% of Massachusetts 9-12 high schools require at least 3 years of social studies.

FIGURE 4

SCIENCE

Years of Instruction Required - 1984



* 57.1% of Massachusetts 9-12 high schools require at least 2 years of science.

* 2.4% of Massachusetts 9-12 high schools require at least 3 years of science.

TABLE 1

Average Years of Instruction Required
9-12 High Schools

English	3.98
Math	1.7
Social Studies	2.2
Science	1.5
 TOTAL	 9.4

TABLE 2

Years of Instruction Required
Vocational High Schools
Class of 1984

n = 31	0 %	1 %	1+ %	2 %	2+ %	3 %	3+ %	4 %	Average # of Years Required
English								100.0	4.0
Math		3.2		12.9	3.2	29.0		51.6	3.3
Social Studies		9.7	3.2	25.8		22.6		38.7	2.9
Science	3.2	12.9		32.3	3.2	16.1	3.2	29.0	2.6

* 100% of Massachusetts vocational high schools require 4 years of English.

* 96.7% require at least 2 years of math.

80.6% require at least 3 years of math.

* 87.1% require at least 2 years of social studies.

61.3% require at least 3 years of social studies.

* 83.8% require at least 2 years of science.

48.3% require at least 3 years of science.

Further analysis examined whether differences exist in the average requirements among 9-12 schools in different kinds of communities, in communities in various wealth categories and in communities with different levels of per pupil expenditure.

B. Kind of Community Analysis

Districts were classified into four kinds of communities (KOC) based on family income level, size, degree of industrialization, community type (urban, rural, suburban) and income. The four KOC's - KOC 1 (Big Cities), KOC 2 (Industrial suburb), KOC 3 (Residential suburb) and KOC 4 (Small towns and other communities) - are described in more detail in Appendix I. Average years of instruction in the four academic areas are given in Table 3 for each of the four KOC's. The data show some variation between KOC 4 and the others. The average number of total years of instruction in KOC 4 schools is 1 year higher than that in KOC 1 schools, which have the lowest average.

TABLE 3

Average Years of Instruction Required by KOC				
	KOC 1	KOC 2	KOC 3	KOC 4
	<u>(n=11)</u>	<u>(n=18)</u>	<u>(n=85)</u>	<u>(n=98)</u>
English	4.0	3.97	3.95	4.01
Math	1.5	1.6	1.6	1.9
Social Studies	2.0	2.4	2.1	2.3
Science	1.3	1.3	1.4	1.6
	_____	_____	_____	_____
TOTAL	8.8	9.3	9.1	9.8

C. Community Wealth Analysis

The data were analyzed to investigate whether differences in course requirements exist among communities with different levels of wealth. Communities were grouped into quartiles, according to their wealth, defined as the average of equalized property value per capita and average income per capita. No significant difference in graduation requirements among communities in the four wealth categories is evident from data presented in Table 4.

TABLE 4

Average Years of Instruction Required by Wealth Quartile

	<u>Lowest</u>	<u>Low-Mod.</u>	<u>Mod.-High</u>	<u>Highest</u>
English	3.98	3.98	4.01	3.94
Math	1.8	1.7	1.7	1.7
Social Studies	2.2	2.3	2.2	2.2
Science	1.4	1.6	1.5	1.5
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	9.4	9.6	9.4	9.3

D. Per Pupil Expenditure Analysis

Further analysis of the data examined whether requirements differ among communities with different levels of per pupil expenditure. Communities were grouped into quartiles, based on the average per pupil expenditure for instruction. The results given in Table 5 show no significant variation based on per pupil expenditure.

TABLE 5

Average Years of Instruction Required by Per Pupil Expenditure Quartile

	<u>Lowest</u>	<u>Low-Mod</u>	<u>Mod.-High</u>	<u>Highest</u>
English	4.00	3.98	4.01	3.92
Math	1.8	1.7	1.7	1.6
Social Studies	2.1	2.2	2.3	2.3
Science	<u>1.5</u>	<u>1.6</u>	<u>1.6</u>	<u>1.5</u>
TOTAL	9.4	9.5	9.6	9.3

E. Other Areas

Table 6 shows subject areas that are required for graduation by at least one high school district.

TABLE 6

<u>Subject Area</u>	<u>School System</u>	
	#	%
ART	1	.4
ARTS & HUMANITIES	1	.4
BUSINESS EDUCATION	3	1.2
CAREER EDUCATION/DECISIONS	6	2.4
COMPUTER COMPETENCY/PROFICIENCY	2	.8
CONSUMER EDUCATION	3	1.2
CPR	2	.8
FINE ARTS	1	.4
FINE/PRACTICAL ARTS	5	2.0
FIRST AID	1	.4
GOVERNMENT	1	.4
GROUP GUIDANCE	1	.4
HEALTH	53	21.2
MUSIC	1	.4
PERSONAL FINANCE	1	.4
PRACTICAL ARTS	3	1.2
READING	1	.4
SHOP	19	7.6
SKILLS DEVELOPMENT	1	.4
SPEECH	4	1.6
SPEECH/READING	1	.4
STUDY SKILLS	1	.4
TECHNICAL DRAWING	1	.4
THEORY, SHOP RELATED	15	6.0
TYPING	5	2.0
VOC-AGR TRAINING	5	.8
WRITING	1	.4

Computer requirements - 2 districts report requiring computer coursework for the Class of 1984.

These figures likely underestimate the number of schools somewhat because of the many requirements allowing some choice among clusters of courses in these areas.

IV. COMPARISONS

Much of the discussion about course requirements centers on which standards should be imposed. Clearly there is no agreement on what is the "best" set of high school graduation requirements. Comparisons with other states are difficult because of the considerable diversity in course requirements across the nation. However, some data upon which to base national comparisons do exist. Data from the spring of 1983 show the following average number of courses required in districts across the nation:

TABLE 7

Comparison of Average Requirements of Massachusetts High Schools with
National Average

	<u>Nation</u>	<u>Massachusetts</u> <u>9-12 High Schools</u>
English	3.6	3.98
Math	1.7	1.7
Social Studies	2.6	2.2
Science	1.6	1.5
Foreign Language	.1	0.00
	<hr/>	<hr/>
TOTAL	9.6	9.4

V. CHANGES IN REQUIREMENTS FOR THE CLASS OF 1987

Following the national trend, many Massachusetts school districts have changed their graduation requirements for future graduating classes. The survey collected data on requirements which had been approved for the class entering high school (9th or 10th grade) in September, 1983. The data do not show, therefore, if districts are considering changes at this time. About one quarter (64 or 25.6%) of Massachusetts high schools reported that they had initiated changes in course requirements for these classes. Since no 10-12 high school reported changes in their requirements and 3 vocational high schools showed only minor changes, the data below represent only the 61 of 212 9-12 high schools that reported changes.

TABLE 8

Changes in Requirements for the Class of 1987

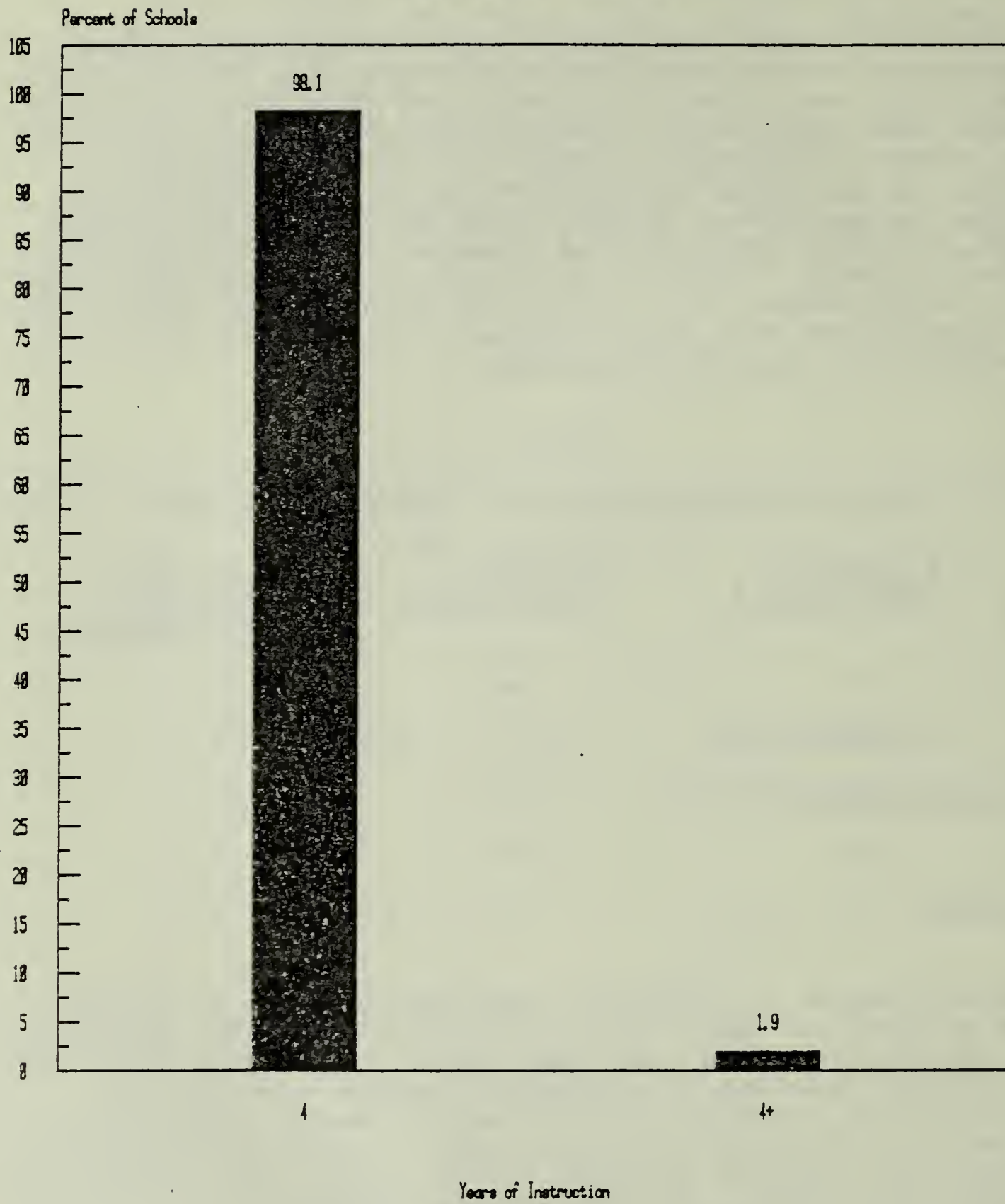
	<u># Changing Requirements</u>	<u>% of All 9-12 Schools</u>	<u>% of Those Changing Requirements</u>
English	8	3.8	13.1
Math	46	21.7	75.4
Social Studies	28	13.2	45.9
Science	38	17.9	62.3
Foreign Language	3	1.4	4.9

Since changes in graduation requirements must be phased in to give students an opportunity to fulfill them, the requirements met by the Class of 1984 were most likely approved no later than 1980. Current thinking on graduation requirements will be reflected in the standards set for later classes. Therefore, an accurate description of current graduation requirements would incorporate the changes reported in the survey, even though they represent requirements for two different classes. The following data describe the requirements that the Class of 1987 will meet in comprehensive 9-12 high schools.

FIGURE 5

ENGLISH

Years of Instruction Required - 1987

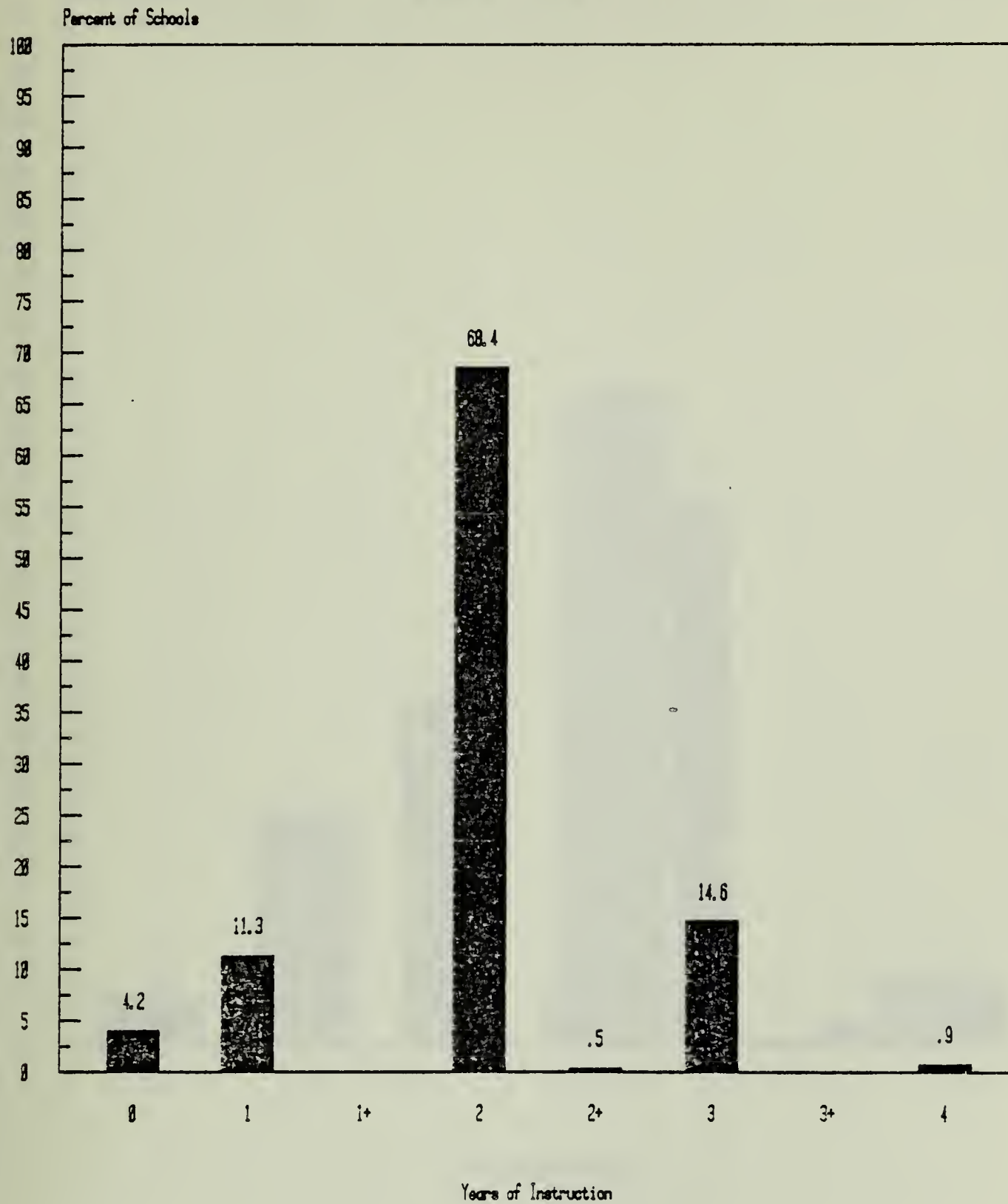


* 100% of Massachusetts 9-12 high schools require 4 or more years of English.

FIGURE 6

MATH

Years of Instruction Required - 1987

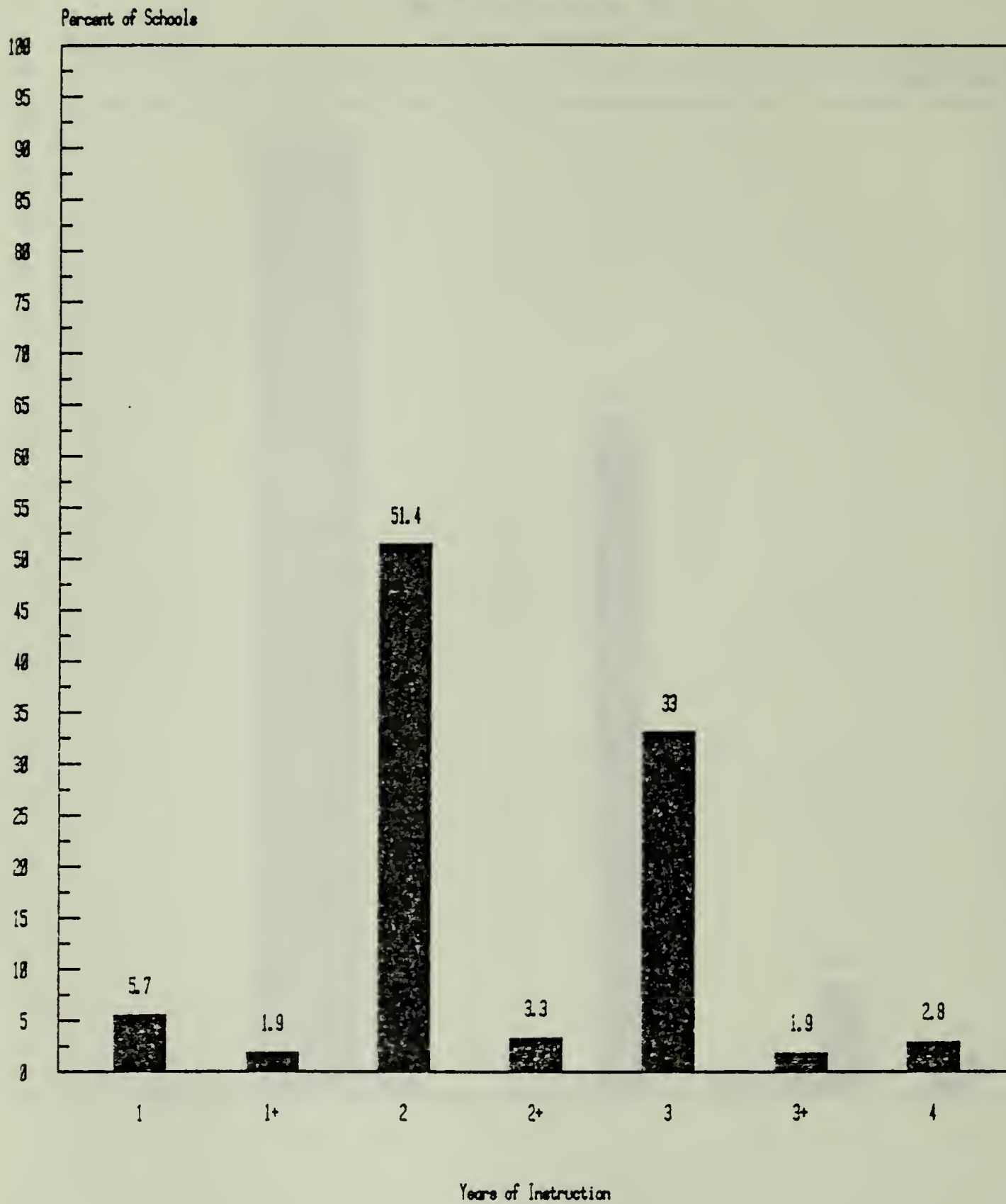


* 84.4% of Massachusetts 9-12 high schools require at least 2 years of math.

* 15.5% of Massachusetts 9-12 high schools require at least 3 years of math.

SOCIAL STUDIES

Years of Instruction Required - 1987



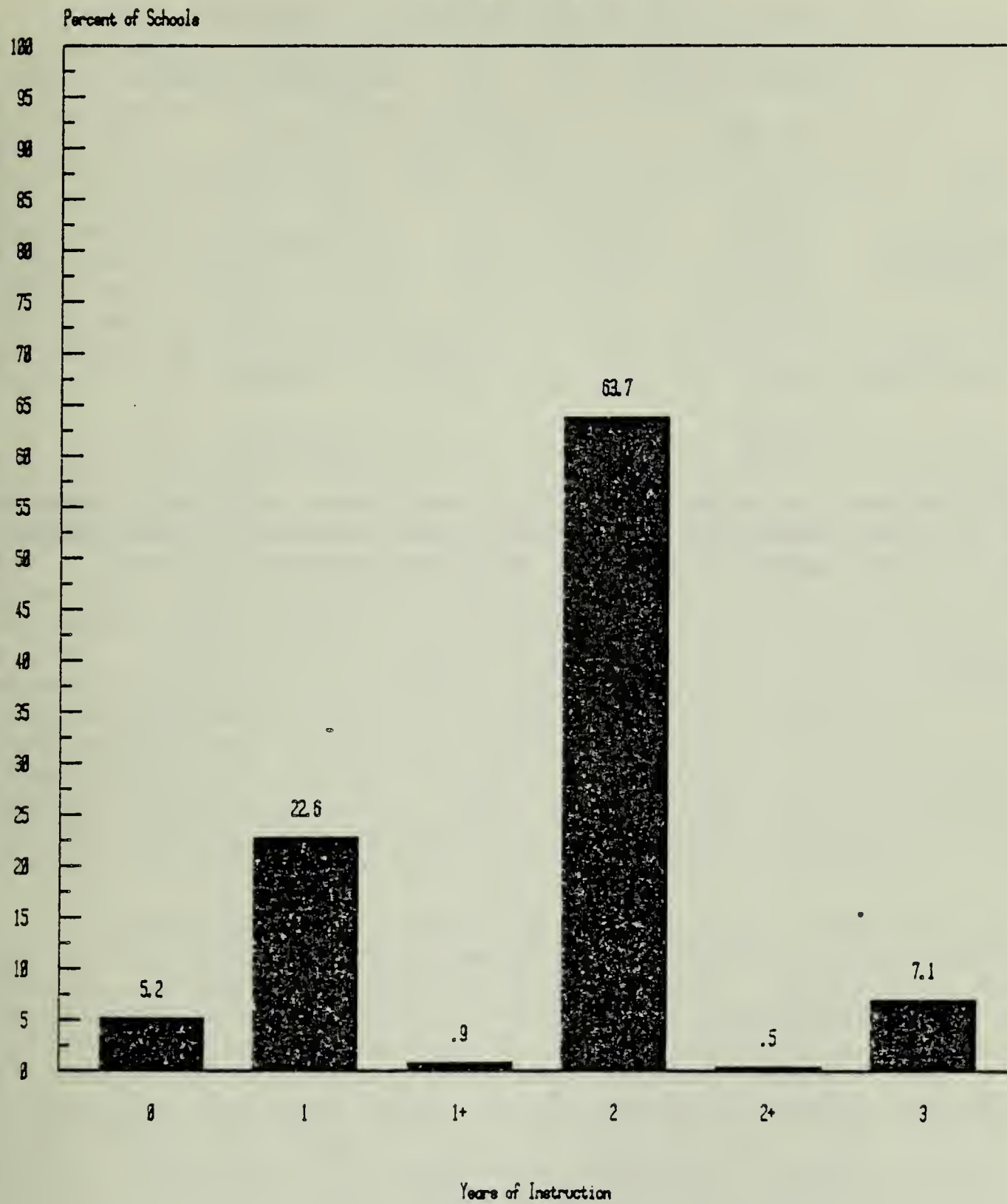
* 92.4% of Massachusetts 9-12 high schools require at least 2 years of social studies.

* 37.7% of Massachusetts 9-12 high schools require at least 3 years of social studies.

FIGURE 8

SCIENCE

Years of Instruction Required - 1987



* 71.3% of Massachusetts 9-12 high schools require at least 2 years of science.

* 7.1% of Massachusetts 9-12 high schools require at least 3 years of science.

TABLE 9

Average Years of Instruction Required

	<u>Class of 1984</u>	<u>Class of 1987</u>
English	3.98	4.01
Math	1.7	1.97
Social Studies	2.2	2.4
Science	1.5	1.7
Foreign Language	0.0	.02
	<u>9.4</u>	<u>10.1</u>

The changes in requirements for the Class of 1987 produce an increase in the number of years required in each of the academic areas and in the total number of years required.

VI. FURTHER STUDY

Although knowledge of graduation course requirements does provide some insight into the high school curriculum offered in Massachusetts schools, it does not present a total picture of a Massachusetts high school education. First, graduation requirements typically delineate the minimum amount of coursework required in each area. The number of years required represents only a portion of even the minimum total number of credits required for graduation. For example, a school may require 20 units for graduation yet specify only 10 units. In such instances, student choice determines a substantial portion of an individual's high school course work. Of course, for students who exceed the minimum number of total credits, student selection accounts for an even larger percentage of courses.

In addition, graduation requirements usually do not distinguish among courses with varying levels of difficulty. For example, a student who elects remedial math and one who chooses Algebra I may both fulfill a school's requirement of one year of math. Therefore, students in a school with a math requirement above the state average do not necessarily have a more rigorous curriculum than those in a school with fewer requirements. Further, it may be less important to know how many schools match proposed sets of requirements than to know how many students actually take the courses listed. Typical graduation requirements, specifying a minimum quantity of time in different areas, provide a limited perspective. Data on what specific courses students actually take, rather than what is required or what is offered, are therefore richer, more useful and more appropriate information upon which to base decisions.

The Department of Education is currently conducting a study that will produce information about students' course-taking behavior during four years of high school. Recognizing the limitations of a survey of graduation requirements, the Department is investigating the actual curriculum (courses taken) of a sample of students graduating in June, 1984. The transcripts of approximately 3,000 randomly chosen students will be analyzed according to the types of courses taken during high school. The study will emphasize academic courses and will be limited to students who are not involved in programs with special coursework. The results of the study will be reported in June, 1985, for the Class of 1984.

FOOTNOTES

- 1 U.S. Department of Education, A Nation Responds, (Washington, D.C.: U.S. Government Printing Office, 1984).
- 2 Mass. Gen. L. Ch. 71, Secs. 2,3.
- 3 U.S. Department of Education, A Nation Responds, p. 144.
- 4 National Center for Education Statistics, "School District Survey of Academic Requirements and Achievement," (April, 1983).
- 5 Chris Pipho, "High School Graduation Requirements in the 50 States," State Education Leader (Winter, 1984), p. 6.
- 6 Ibid, p. 5.

APPENDIX I

Data for Schools with grades 10-12
(n=7)

Years of Instruction Required
Classes of 1984 and 1987

	$\frac{0}{\%}$	$\frac{1}{\%}$	$\frac{1+}{\%}$	$\frac{2}{\%}$	$\frac{2+}{\%}$	$\frac{3}{\%}$
English						100.0
Math	14.3	57.1	14.3	14.3		
Social Studies		57.1		28.6	14.3	
Science	28.6	57.1	14.3			

Average Years of Instruction Required
Classes of 1984 and 1987

English	3.0
Math	1.1
Social Studies	1.5
Science	.8
TOTAL	<u>6.4</u>

*No 10-12 schools reported changes in requirements for the Class of 1987.

*The number of 10-12 schools is too small to analyze by KOC, wealth and per pupil expenditure.

APPENDIX II

KOC Definitions

- KOC 1: **Big Cities** generally refer to communities designated as central cities according to the 1970 United States Census. Examples of Massachusetts big cities include Brockton, Haverhill, Holyoke, Lawrence, Worcester.
- KOC 2: **Industrial Suburbs** generally include three types of communities: suburbs in the inner Boston circle with below average family income and with more than 20% commercial and 7% industrial land use; suburbs in the outer Boston circle with below average family income and with more than 20% commercial land use; and suburbs of central cities other than Boston with below average family income and with more than 20% commercial and 7% industrial land use. Examples of industrial suburbs are Cambridge, Chelsea, Medford, Quincy, Peabody, Waltham, Lee and Monson.
- KOC 3: **Residential Suburbs** generally fall into three categories: suburbs of Boston (not industrial suburbs) with average family incomes up to \$16,000; suburbs of Boston (not industrial) with average family incomes over \$16,000; and suburbs of central cities other than Boston with above average family incomes. Examples include Arlington, Braintree, Framingham, Scituate, Walpole, Andover, Dover, Milton, Newton, Chelmsford, Shrewsbury, Wilbraham.
- KOC 4: **Small Towns and Other Communities** generally include the following types: resort towns in the Cape Cod area; resort towns in the Berkshire area; suburbs of cities other than Boston (not industrial suburbs) with less than average family income; towns with below average family income and industrial/commercial land use; towns with below average family income that are non-industrial, non-commercial and non-resort areas; and communities with a population of less than 2,500 inhabitants but not resort areas. Examples of small towns and other communities include Barnstable, Chatham, Yarmouth, Stockbridge, Bridgewater, Hadley, Oxford, Stoughton, Newburyport, Taunton, Ayer, Kingston, Orange, Webster, Ashfield, Dunstable, Plympton.